



## **HEMS or GEMS, which is the better transport system for trauma patients?**

Traumatized patients (Injury Severity Score, ISS 9) primarily treated by HEMS or ground emergency medical services (GEMS) between 2007 and 2009 were analyzed using the Trauma Register DGU(R) of the German Society for Trauma Surgery.

### **Results**

13,220 patients with traumatic injuries were included in the present study. 62.3% (n=8,231) were transported by GEMS and 37.7% (n=4,989) by HEMS. Patients treated by HEMS were more seriously injured compared to GEMS (ISS 26.0 vs. 23.7,  $P<0.001$ ) with more severe chest and abdominal injuries. The extent of medical treatment on-scene, which involved intubation, chest and treatment with vasopressors, was more extensive in HEMS resulting in prolonged on-scene time (39.5 vs. 28.9 minutes,  $P<0.001$ ). During their clinical course, HEMS patients more frequently developed multiple organ dysfunction syndrome (MODS) (HEMS: 33.4% vs. GEMS: 25.0%;  $P<0.001$ ) and sepsis (HEMS: 8.9% vs. GEMS: 6.6%,  $P<0.001$ ) resulting in an increased length of ICU treatment and in-hospital time ( $P<0.001$ ). The Standardized Mortality Ratio (SMR) was significantly decreased in the HEMS group.

### **Conclusions**

Although HEMS patients were more seriously injured and had a significantly higher incidence of MODS and sepsis, these patients demonstrated a survival benefit compared to GEMS.



## Considerations

- *Transport time to the trauma Center, in both systems, exceed the classic concept of Golden Hour (HEMS: 79.9 min<sup>256</sup>, GEMS: 62.8 min). According to some recent letterature, however, prolonged on-scene time does not seem to adversely affect mortality, and the results of this study goes in that direction.*
- *Survival is positively affected by the execution of life-saving procedures (rapid sequence endotracheal intubation, chest tube insertion); the greater propensity of doctors working in air ambulance to implement them makes the difference on patients outcome.*
- *The specificity and sensitivity of prehospital diagnosis is absolutely comparable between the two systems and make no difference survival.*
- *Despite the patient transported by air are more frequently admitted to afirst level Trauma Center even this does not seem to affect survival.*

## Comment

*The emergency system involved in the study is similar to the Italian one. Then we can draw valuable information from its results.*

*It's desirable that the prehospital emergency systems motivate their professionals in the execution of the life-saving maneuvers required for trauma victims, through the adoption of specific protocols and adaptation of drugs and devices.*

*The performance of these maneuvers seems to have a significant and positive impact on survival, even at the cost of prolonged on the scene time.*

**Improving survival in all trauma patients must be a mission in any emergency medical system.**

